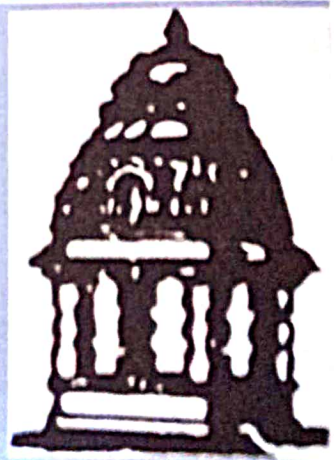


RUDRAPRASAD CONSULTANTS

NAME OF WORK: IMPROVEMENTS ROADS
AND DRAINS AT MCECHS LAYOUT IN WARD
NO-05 BYATARAYANAPURA SUB DIVISION

DETAILED PROJECT REPORT

SUBMITTED TO B.B.M.P.,
BANGALORE



#3, 7th Main Malleswaram, Bangalore – 560003

Telefax: 9180 23444801, Mobile: 91 9972924526 Web: www.arkstructure.com e-mail: rechan6630@yahoo.co.in



BRUHAT BENGALURU MAHANAGARA PALIKE

**NAME OF WORK: IMPROVEMENTS ROADS AND
DRAINS AT MCECHS LAYOUT IN WARD NO-05
BYATARAYANAPURA SUB DIVISION**

DETAIL PROJECT REPORT


Rudraprasad Consultants
No.3, 7th Main,
Malleswaram Bengaluru-560003

**Executive Engineer
Byatarayanapura Division
Bengaluru**

Table of Contents

1. INTRODUCTION	
1.1 General	1
1.2 Topography	4
1.3 Project Objective	4
1.4 Outline of the project	5
1.5 Contents of Detailed Project report	5
2. DESCRIPTION OF PROJECT ROADS	6
2.1. General	7
2.2. Existing Project Road	7
2.2.1. Terrain	7
2.2.2. Alignment	8
2.2.3. Climate	8
2.2.4. Carriage Way Width	9
2.2.5. Pavement Condition	10
2.2.6 Land Use along the Project Highway	10
2.3 Traffic Flow Conditions	10
2.4 Cross Drainage Structures and Side Drains	10
2.5 Utilities	11
2.6 Trees	12
3. CONCLUSIONS	13
3.1 General	13
3.1.1. Geometric Improvements	13
3.1.2. Strengthening of Existing Pavements	13
3.2. Improvement Proposal for Carriageway	14
3.3. Improvement Proposal for Side Drains	14



3.4.	Improvements Related to utility, Road Furniture and appurtenances	15
4	COST ESTIMATES	16
4.1	Detailed Cost Estimate	17
4.2	General	17
4.3	Basic rates	17
4.4	Utility Relocation	17
4.5	Project Management and Quality Control	17
4.6	Project Cost	17
5.	DETAILED ESTIMATES	
6.	DRAFT TENDER SCHEDULE	
7.	BILL OF QUANTITIES	
ANNEXURES		
	➤ TYPICAL CROSS SECTION	
	➤ ROAD PHOTOGRAPHS	
	➤ WARD MAP	
	➤ KEY MAP	

INTRODUCTION

CHAPTER – 1

INTRODUCTION

Detailed Project Report

1.1 General

India's pride, Bengaluru is nearly 500 years old and has grown from a small time settlement when Kempe Gowda, the architect of Bengaluru, built a mud fort in 1537 and his son marked the city boundaries by erecting four watch towers. Bangalore is the capital and the largest city of Karnataka. It is also called "Garden City" for its beautiful gardens, flowers and trees which flourish in each and every street. Bangalore is India's third largest city, fifth most populous city and fifth-most populous urban agglomeration. The majority of the city of Bangalore lies in the Bangalore Urban district of Karnataka and the surrounding rural areas are a part of the Bangalore Rural district. In recent days Bangalore has transformed itself from a "pensioners' paradise" to a modern thriving "cosmopolitan metropolis". Today Bengaluru has grown well beyond those four towers into a sprawling metropolis of more than 6 million people and is referred to as the "Silicon Valley" of India.

As a large and growing metropolis, Bangalore is home to many well-recognized colleges and research institutions in India. Numerous public sector heavy industries, software companies, aerospace, telecommunications, and defence organizations are located in the city. Bangalore is also well known as a hub for India's Information Technology sector. It is among the top 10 preferred entrepreneurial locations in the world. Bangalore is a major economic and cultural hub and the second fastest growing major metropolis in India. Today 35 percent of India's software export is done at Bangalore. Rapid population growth in Bangalore was brought about by the IT and other associated industries, leading to an increase in the population to about 1.5 million, with an annual growth rate of 10-14% every year.

Bangalore today is obviously one of the most sought after cities in the country with the rapid growth in the IT industry and other associated industries the rise in the number of job opportunities in the city. With the rising population in the city there is also a corresponding increase in the number of vehicles in the city. Bangalore's vehicular traffic has increased

manifold, with 1.6 million registered vehicles in the city — the second highest for an Indian city, after New Delhi. Bangalore in particular is that there is very little scope for expansion of roads and the need to use existing roads for smooth movement of vehicles is even more pronounced. It thus becomes mandatory for the administration to ensure better parking facilities. With the increase in population and the expansion of the city, the problem of connectivity of the populace has arisen. Quite obviously personalized modes of transport have grown at a tremendous rate and two wheelers along with the cars. The maintenance and construction of roads to address the growing traffic in the city has been a challenge to the BDA and the BBMP. Development of the city road infrastructure has revolved around imposing one-way traffic in certain areas, improving traffic flow in junctions, constructing ring roads, bridges, flyovers and other grade separators.

Bangalore's road network exceeds 3,000 km (1,800 mi) and consists of ring roads, arterial roads, sub-arterial roads and residential streets. The city road network is mainly radial, converging in the centre. Many of Bangalore's erstwhile colonial and town streets were developed into commercial and entertainment areas after independence. The B.V.K Iyengar Road became the retail hub of Bangalore, while MG Road, Commercial Street and Brigade Road became important shopping, recreation and corporate areas. But for MG Road, other roads in and around the erstwhile Parade Ground remain narrow, winding roads. The unplanned nature of growth in the city resulted in massive traffic gridlocks that the municipality attempted to ease by constructing a flyover system and by imposing one-way traffic systems. Some of the flyovers and one-ways mitigated the traffic situation moderately but were unable to adequately address the disproportionate growth of city traffic. Some of the flyovers and one-ways mitigated the traffic situation moderately; however the volume of traffic continues to grow at an annual rate of between 7- 10%. The Outer Ring Road was initially constructed to ease truck congestion in the city; however the growth of suburbs reduced the positive impact of the ring road. BDA is laying additional lanes on many of the major roads around Bangalore. The Peripheral Ring Road is designed to be concentric to the Outer Ring Road and covers 108.9 km. The Hosur Road, which connects Bangalore to the Electronics City, is heavily congested and is part of the National Highway (NH7), therefore witnesses' heavy truck traffic as well.



Export Promotional Industrial Park (EPIP) in Bangalore is the place which entrepreneurs love to be identified with. EPIP is in the just next door of M/s ITPL, an internationally acclaimed technology park promoted by KIADB with TATAs and Singapore consortium of industries. This park comes with state-of-the-art infrastructure facilities. Following are the few of many features of this prestigious location

- Location in unpolluted, lush green atmosphere, just 17 Kms. from the heart of the city and 9 Kms. from Bangalore Airport.
- Total extent of developed land is 547 acres with well-laid asphalted roads & drainage systems.
- Assured water supply & dedicated power lines with Sodium Vapor street lighting.
- KTPO Exhibition Complex coming up in the area. Hospital with ultra modern facilities and well-equipped inland container depots.
- Well connected with public transport with host of secondary infrastructure facilities like telephones, Posts & Telegraph, Banks, ATMs, Convention center. Cafeterias, Travel operators.

EPIPs are the destination for industrial units who have plans to export at least 33% of their output in value offshore. These parks come with well-planned infrastructure, which is hallmark of KIADB's service. These parks are established with the sanction of Union Govt, of India to give impetus to growth of exports in the state. Government of Karnataka offers host of incentives and concessions to export oriented units.

The Bruhat Bengaluru Mahanagara Palike (BBMP, Greater Bangalore Municipal Corporation vide Government of Karnataka Notification no. UDD 92 MNY dt: 2.11.2006) is in charge of the civic administration of the city. It was formed in 2007 by merging 100 wards of the erstwhile Bangalore Mahanagara Palike, with seven neighboring City Municipal Councils (Rajarajeshwari Nagara, Dasarahalli, Bommanahalli, Krishnarajapuram, Mahadevapura, Byatarayanapura and Yelahanka), one Town Municipal Council (Kengeri) and 111 villages around Bangalore. The BBMP Is run by a city council composed of 250 members, including 198 corporators representing each of the wards of the city. The BBMP works with the Bangalore Development Authority (BDA) and the Agenda for Bengaluru Infrastructure and Development Task Force (ABIDe) to design and implement civic projects.

The BBMP has taken up an ambitious plan to upgrade Arterial & Sub Arterial Road network in these newly added areas of BBMP and Development, maintenance and management of high quality network in EPIP zone roads at Mahadevapura Zone, where the traffic intensity has increased significantly and to augment the capacity for safe, efficient and free flow of traffic. Roads in and around EPIP zones are being upgraded to arterial road standards which will result in enormous increase in the traffic. Tech city, a preferred choice of many global corporations to position their businesses. It has indeed been a challenge to the government agencies including the urban local bodies to meet up with these unprecedented demands and challenges of the global companies and its citizens demanding international class 'citizen services'.

The project consists of improvements to roads and drains, at MCHS layout in ward 05 of Byatarayanapura Division, which includes 9 roads. The existing roads need to be improved, since they are not in good condition and to avoid inconvenience to people living in these wards. The total length of all roads in Ward –1237.0m (1.237Km), The ward maps in which the respective roads are highlighted are enclosed with this report.

1.2 Topography

Bangalore is situated in the southeast of Karnataka, at an average elevation of 920m above mean sea level. It is positioned at 12.97°N, 77.56°E and covers an area of 2, 190 sq.km. Bangalore Urban District borders with Kolar District in the northeast, Tumkur District in the northwest, Mandya District in the southwest, Chamarajanagar District in the south and the neighboring state of Tamil Nadu in the southeast. The Bangalore Urban District is divided into three taluks; Bangalore North, Bangalore South, and Anekal. The Bangalore North taluk is a relatively level plateau, while the Bangalore South taluk has an uneven landscape with intermingling hills and valleys.

1.3 Project objective

- The main objective of the study is to establish the technical & economical viability of the project roads by rehabilitation, strengthening, asphaltting, concrete including culverts and improvements of side drains of the existing roads.
- The detailed project study includes submission of the detailed project report for the project as per standards.



1.4 Outline of the project

The consultant is required to conduct various engineering Surveys, Investigate, Carry out Detailed Design and Viability of the project. **Prepare Detailed Project Report**, based on Detailed Design and Bill of Quantities.

1.5 Contents of Detailed Project Report

This Detailed Project Report is submitted in 8 chapters dealing with different aspect of the study of the project road.

Chapter description

- | | |
|---|-------------------------|
| 1 | Introduction |
| 2 | Socio-Economic Profile |
| 3 | Description of project |
| 4 | Methodology |
| 5 | Design Standards |
| 6 | Pavement Overlay design |
| 7 | Conclusion |
| 8 | Cost estimate |



DESCRIPTION OF PROJECT ROADS

CHAPTER - 2

DESCRIPTION OF PROJECT ROADS

2.1 General

The project consists of bad roads in Ward No.5, Byatarayanapura Division, which includes 9 roads in. The existing roads need to be improved since there are formation of Cracks, Rutting and Potholes which are a hindrance to the free movement of traffic, in turn causing inconvenience to the people of the respective wards. The total length of all roads in Ward No.5 is 1272.0m (1.272Km), Majority of roads pass through residential and commercial area. Below are the lists of the bad roads in their respective wards.

➤ List of Roads in Ward No.05

- 2nd Cross house No. 71-75
- 3rd Main Road (MCECHS Layout) House No. 62-70
- 3rd Cross Road House NO. 136-140
- 4th Main road House No. 84-99
- 3rd A Main Road
- Euro kid pre School Road
- 2nd main Road house no. 60-42
- 3rd Cross connecting SWD drain

2.2 Existing project roads

2.2.1 Terrain

Terrain is classified by general slope of the country across the alignment, based on this criterion majority of the project roads pass through Plain terrain.

2.2.2 Alignment

The existing roads have the carriage widths varying from 8 m to 11.5 m and the existing gradients of the project roads are within acceptable limits as per IRC: 86. Table 1 shows the list of project roads with their carriage way widths.

2.2.3 Climate

Due to its elevation, Bangalore enjoys a pleasant climate throughout the year, with temperatures ranging between 33°C and 16°C, with an average of 24°C. The summer heat is moderated by occasional thunderstorms and squalls. Bangalore receives adequate rainfall of about 860 mm from the Northeast Monsoon as well as the Southwest Monsoon. The wettest months are August, September and October.

2.2.4 Carriageway Width

The existing carriageway width varies from 8 m to 11 m. Details of carriageway width are as shown in Table 2.1 below,

Table 2.1 - LIST OF ROADS WITH THEIR CARRIAGE WAY WIDTHS

SI No	Name of the Road	Carriage Way Width in m
Ward No.05		
MCHS LAYOUT		
1	2nd Cross house No. 71-75	10
2	3rd Main Road (MCECHS Layout) House No. 62-70	10.9
3	3rd Main Road (MCHS Layout) House No. 62-70	11.2
4	3rd Cross Road House NO. 136-140	8
5	4th Main road House No. 84-99	10
6	3rd A Main Road	11.5
7	Euro kid pre School Road	9.4
8	2nd main Road house no. 60-42	9.8

9	3rd Cross connecting SWD drain	12.7
---	--------------------------------	------

2.2.5 Pavement Condition

The existing pavement conditions are analyzed based on visual inspection as per IRC 81-1997 Table -1. The Roads as per the Visual Inspection were found to be in Good to Poor condition. This may be due to improper material in subgrade, compaction or movement heavily loaded trucks. The summaries of pavement condition obtained by visual inspection are listed in Table 2.2 below.

TABLE 2.2: PAVEMENT CLASSIFICATION BASED ON VISUAL INSPECTION

Sl.No	Name of the Road	Road Condition
MCHS LAYOUT		
1	2nd Cross house No. 71-75	poor
2	3rd Main Road (MCECHS Layout) House No. 62-70	poor
3	3rd Main Road (MCECHS Layout) House No. 62-70	poor
4	3rd Cross Road House NO. 136-140	poor
5	4th Main road House No. 84-99	poor
6	3rd A Main Road	poor
7	Euro kid pre School Road	poor
8	2nd main Road house no. 60-42	poor
9	3rd Cross connecting swd drain	poor

2.2.6 Land Use along the project highway

Land use along majority of roads is predominantly for built up area. The settlements are used for residential and commercial purposes.

2.3 Traffic flow conditions

Traffic on these project roads is of mixed type. Majority of roads only carry passenger vehicle most of the time, and there are also commercial vehicles ply on some roads. Commercial vehicles include 2-axle and 3-axle trucks and LCVs.

The intensity of traffic on this stretch is likely increase in future, the reason being:

- The Bangalore Mahanagara Palike became Bruhat Bangalore Mahanagara Palike after inclusion of 7 CMC, 1TMC & 111 Villages adjoining to the CMC areas vide Government of Karnataka Notification No. UDD 92 MNY 2006 dated 02.11.2006. To provide better transport facility, to improve the quality of urban civic services better roads are needed. At present the existing roads in these newly added areas are narrow without proper Drainage, Footpath, and Culverts etc. The BBMP has taken up an ambitious plan to upgrade Arterial & Sub Arterial Road network in these newly added areas of BBMP in view of providing better infrastructure.
- Roads in and around EPIP zones are being upgraded to arterial road standards which will result in enormous increase in the traffic.
- The number of commercial and residential plots in the given area is high.
- Rising traffic congestion is one of the key issues in the City. Though the length of roads available is good, the problem lies with the restricted widths.

2.4 Cross Drainage Structures and Side Drains

There are no major CD structures along the project road except for the cross roads. The condition of the existing CD structures is good.



2.5 Utilities

HT Lines

HT lines do not cross along the project roads

- **Light Poles**

Large numbers of light poles are present along the project roads in regular intervals

2.6 Trees

The project roads consist of trees beside the carriageway at regular intervals. Also tree pits are constructed for all the trees on either side of the roads for watering the trees. Curb stones are laid all rounds the tree pits for protection



CONCLUSION



CHAPTER - 3

CONCLUSIONS

3.1 General

The primary data collected from the site provides a clear picture of the site conditions, and also gives us a good insight about the deficiencies and the scope for improvements. The primary data coupled with the good engineering expertise lead us in giving apt and economical recommendations for the improvements. A budget of Rs. 4,00,00,000/- (Rs. Four Crore Only) has been allocated for this project. Hence, the provisions of items made in the cost estimate are in consensus with the allocated budget. The improvement proposal includes the following:

3.1.1. Geometric Improvements:

- Improvements of existing carriageway
- Improvements to cross sectional elements
- Improvements to horizontal alignment
- Improvements to longitudinal profile

3.1.2. Strengthening of Existing Pavements:

- Pavement Overlay design
- Road Drainage
- Road Furniture and Appurtenances
- Pedestrian Facilities
- Aesthetics

The summary of improvement proposals along the project roads in Ward no.05 Conforming to Design Standards with all the Relevant Details such as Length and Width of existing roads, Plans and Construction Costs has been prepared. The details of improvement proposals are discussed in subsequent sections.



3.2. Improvement proposal for Carriageway

Since the majority of the roads are Arterial and sub-arterial roads where the Traffic intensity is less than 10msa, Table 3.1 shows the improvement proposals and pavement composition for the existing roads.

TABLE 3.1: IMPROVEMENT PROPOSAL AND PAVEMENT CONDITION

DETAILS

FLEXIBLE PAVEMENT

Sl.No	Name of the road	BC
Ward No.5		
MCHS LAYOUT		
1	2nd Cross house No. 71-75	40
2	3rd Main Road (MCHS Layout) House No. 62-70	40
3	3rd Main Road (MCHS Layout) House No. 62-70	40
4	3rd Cross Road House NO. 136-140	40
5	4th Main road House No. 84-99	40
6	3rd A Main Road	40
7	Euro kid pre School Road	40
8	2nd main Road house no. 60-42	40
9	3rd Cross connecting SWD drain	40

3.3. Improvement Proposal for Side Drains

Adequate drainage is a primary requirement for maintaining the structural soundness and functional efficiency of a road in addition to preserving the valuable road assets created.



Pavement structure including subgrade must be protected from any ingress of water, otherwise over a period of time it may weaken the sub grade by saturating it and cause distress in the pavement structure. Hence, rapid dispersal of water from pavement and sub grade is a basic consideration in road design. Also, quick drainage takes away the water from pavement's surface and reduces chances of skidding of vehicles.

The requirements of road drainage are essentially based on IRC: SP-42-" Guidelines on Road Drainage" and IRC: SP-50 -"Guidelines on Urban Drainage". Camber of 3.0 is provided for the carriageway. For longitudinal drains, a minimum longitudinal gradient of 0.3 percent shall be ensured for satisfactory drainage.

3.4. Improvements Related to Utility, Road Furniture and Appurtenances

Utility and Importance of the Road are greatly enhanced by installing Road Furniture and Appurtenances at appropriate locations along the Project Road, which ensures Improved Road Safety. Planning and Design of Road Furniture and Appurtenances are as per the Guidelines stipulated in IRC. Detailing of each of these Components has been done so that to integrate the same with the Road Improvement Scheme.



COST ESTIMATES



CHAPTER – 4

COST ESTIMATES

4.1. Detailed Cost Estimate

Detailed cost estimate for various works listed in Improvements roads and drains at MCECHS layout in ward no-05 Byatarayanapura Sub division has been worked out based on detailed engineering design.

4.2. General

Cost Estimate is an important part of the DPR as it provides vital input to financial evaluation of the project. The cost estimates have been prepared for strengthening of the existing road, repairs and improvements to longitudinal drains, road furniture and appurtenances.

4.3. Basic rates

As part of Detailed Project Report, Rate Analysis of each of the item has been prepared by adopting PW, P & IWTDR SR 2018-19, Bangalore Circle. The rates as given in PW, P & IWTDR SR are to be enhanced by 6% for additional weight age for the works to be executed under extra ordinary conditions for Bangalore Metropolitan Limits. Items not covered in NHR / PW, P & IWTDR SR have been based on market rates.

4.4. Utility Relocation

Provision of 1.5% of Construction cost is made in the cost estimated for raising and or shifting electric supply lines, telephone lines, OFC lines and other utilities.

4.5. Project Management and Quality Control

Provision of 2.0% of Construction Cost has been made towards Cost of DPR Preparation, PMC and Proof Checking.



4.6. Project Cost

The total project cost for *Preparation of DPR for Improvements roads and drains at MCECHS layout in ward no-05 Byatarayanapura Sub division* is Four Crore and the Detailed Cost Estimate is enclosed.

ANNEXURES

DETAILED ESTIMATE

BRUHAT BANGALORE MAHANAGARA PALIKE

**NAME OF WORK:- IMPROVEMENTS ROADS AND DRAINS AT MCECHS LAYOUT IN WARD NO-05
BYATARAYANAPURA SUB DIVISION**

		Estimation Cost.Rs					40000000.00		
Sl No	Description of work	Unit	Mesurement				Qty	Rate	Amount
			No.	L	B	D			
1	Removing B.S Slab of Drain and stacking(Pg. No. 27 Item No. 5.32) and Pg No.136, Item No.17.4,17.1 (5km lead = 57+2*1.28X5)								
	Drain		Width=Perimeter of Drain in U Shape						
	MCECHS Layout								
	2nd Cross house No. 71-75	Sqm	2	96.00	1.80		345.60		
	3rd Main Road (MCECHS Layout) House No. 62-70	Sqm	2	98.00	1.80		352.80		
		Sqm	2	101.00	1.80		363.60		
	3rd Cross Road House NO. 136-140	Sqm	2	171.00	1.80		615.60		
	4th Main road House No. 84-99	Sqm	2	171.00	1.80		615.60		
	3rd A Main Road	Sqm	1	130.00	1.80		234.00		
	Euro kid pre School Road	Sqm	1	220.00	1.80		396.00		
	Basic rate	99.00							
	Area weightage 6%	5.94							
	5Km lead & Lift= 57+(2*1.28*5)	69.80							
	Sub Total	174.74							
	Total						2923.20	174.74	510800.00
2	18.27 KSRRB M200-15.2. Dismantling of existing structures like culverts,bridges, retaining walls and other structure comprising of masonry, cementconcrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts as per specifications. iii)Dismantling Stone Masonry. B. Rubble Stone masonry in cement mortar.No. KBS Pg No 140 ,Item No 18.27, (8km lead = 57+2*1.28X5)								
	SSM Culvert								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	2	12.70	0.45	0.50	5.72		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	2	12.80	0.45	0.50	5.76		
	3rd Cross Road House NO. 136-140	Cum	2	12.50	0.45	0.50	5.63		
		Cum	2	13.20	0.45	0.50	5.94		
	3rd A Main Road	Cum	2	13.20	0.45	0.50	5.94		
	Basic rate	351.00							
	Area weightage 6%	21.06							
	8Km lead & Lift= 57+(2*1.28*5)	69.80							
	Sub Total	441.86							
	Total						28.98	441.86	12806.00
	KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means :B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. Page No. 139, Item No.18.18 and Pg No.136, Item No.17.4,17.1 (8km lead = 57+2*1.28X5)								
	Deck Slab								
	MCECHS Layout								
	On Drain Slab								
	2nd Cross house No. 71-75	Cum	2	96.00	1.20	0.10	23.04		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	2	98.00	1.20	0.10	23.52		
	3rd Cross Road House NO. 136-140	Cum	1	171.00	1.20	0.10	20.52		
	Euro kid pre School Road	Cum	1	220.00	1.20	0.10	26.40		
	Culvert Deck Slab								
	2nd Cross house No. 71-75	Cum	1	12.70	2.00	0.23	5.84		

Sl No	Description of work	Unit	Measurement				Qty	Rate	Amount
			No.	L	B	D			
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	1	12.80	2.00	0.23	5.89		
		Cum	1	11.50	2.00	0.23	5.29		
	3rd Cross Road House NO. 136-140	Cum	1	12.50	2.00	0.23	5.75		
		Cum	1	13.20	2.00	0.23	6.07		
	3rd A Main Road	Cum	1	13.20	2.00	0.23	6.07		
	Euro kid pre School Road	Cum	2	13.00	2.00	0.23	11.96		
	Basic rate	557.00							
	Area weightage 6%	33.42							
	8Km lead & Lift= 57+(2*1.28*5)	69.80							
	Sub Total	660.22							
	Total						140.35	660.22	92665.00
4	KSRRB 300-1. Earthwork excavation by manual means for roads, drains & similar works in ordinary soil excavated surface levelled and sides neatly dressed, the disposed earth to be levelled neatly after breaking of clods complete as per specifications(P.No-143 & 136, I No-19.1 & 17.4 & 17.1) (8km lead = 57+2*1.28X5)								
	New Drain								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	2	96.00	1.30	1.10	274.56		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	2	98.00	1.30	1.10	280.28		
		Cum	2	101.00	1.30	1.10	288.86		
	3rd Cross Road House NO. 136-140	Cum	2	171.00	1.30	1.10	489.06		
	4th Main road House No. 84-99	Cum	2	171.00	1.30	1.10	489.06		
	3rd A Main Road	Cum	1	130.00	1.30	1.10	185.90		
	Euro kid pre School Road	Cum	1	220.00	1.30	1.10	314.60		
	3rd Cross Connecting SWD Drain	Cum	2	117.00	1.30	1.10	334.62		
	Desilt								
	3rd A Main Road	Cum	1	130.00	0.50	0.60	39.00		
	Euro kid pre School Road	Cum	1	220.00	0.50	0.60	66.00		
	New Culvert								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	1	12.70	2.00	1.00	25.40		
	3rd Main Road (MCECHS Layout)	Cum	1	12.80	2.00	1.00	25.60		
		Cum	1	11.50	2.00	1.00	23.00		
	3rd Cross Road House NO. 136-140	Cum	1	12.50	2.00	1.00	25.00		
		Cum	1	13.20	2.00	1.00	26.40		
	3rd A Main Road	Cum	1	13.20	2.00	1.00	26.40		
	Euro kid pre School Road	Cum	2	13.00	2.00	1.00	52.00		
	3rd Main Connecting to SWD Drain	Cum	1	7.00	1.40	1.15	11.27		
	3rd Cross Connecting SWD Drain	Cum	1	7.00	1.40	1.15	11.27		
	Overburden								
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	2	98.00	0.60	0.45	52.92		
	3rd Cross Connecting SWD Drain	Cum	2	24.00	1.40	1.00	67.20		
	Basic rate	130.00							
	Area weightage 6%	7.80							
	8Km lead & Lift= 57+(2*1.28*5)	69.80							
	Sub Total	207.60							
	Total						3108.40	207.60	645304.00

SI No	Description of work	Unit	Mesurement				Qty	Rate	Amount
			No.	L	B	D			
5	KSRRB M2100 PCC 1 KSRRB M2100-10. Providing and laying Plain cement concrete of mix 1:3:6 with OPC cement @ 220kgs, with crushed 40mm and down size graded granite metal coarse aggregates @0.89cum and fine aggregates @ 0.46cum, in foundation mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days Including cost of materials,labour, HOM curing form work, Scaffolding and Centering complete as per specifications.MORTH Specification No. 2100 Pg no:222 Item no:27.18								
	New Drain								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	2	96.00	1.30	0.15	37.44		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	2	98.00	1.30	0.15	38.22		
		Cum	2	101.00	1.30	0.15	39.39		
	3rd Cross Road House NO. 136-140	Cum	2	171.00	1.30	0.15	66.69		
	4th Main road House No. 84-99	Cum	2	171.00	1.30	0.15	66.69		
	3rd A Main Road	Cum	1	130.00	1.30	0.15	25.35		
	Euro kid pre School Road	Cum	1	220.00	1.30	0.15	42.90		
	3rd Cross Connecting SWD Drain	Cum	2	117.00	1.30	0.15	45.63		
	New Culvert								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	1	12.70	2.00	0.15	3.81		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	1	12.80	2.00	0.15	3.84		
		Cum	1	11.50	2.00	0.15	3.45		
	3rd Cross Road House NO. 136-140	Cum	1	12.50	2.00	0.15	3.75		
		Cum	1	13.20	2.00	0.15	3.96		
	3rd A Main Road	Cum	1	13.20	2.00	0.15	3.96		
	Euro kid pre School Road	Cum	2	13.00	2.00	0.15	7.80		
	3rd Main Connecting to SWD Drain	Cum	1	7.00	1.40	0.15	1.47		
	3rd Cross Connecting SWD Drain	Cum	1	7.00	1.40	0.15	1.47		
	Basic rate	5359.07							
	Area weightage 6%	321.54							
	Sub Total	5680.61							
	Total						395.82	5680.61	2248500.00
6	Providing laying plain/ reinforced cement concrete for side Drains Using M20 nominal mix Concrete with OPC at 300kgs. With 20mm and Down size granite metal coarse aggregate at 0.69cum and fine aggregate at 0.43cum Machine mixed, well compacted for wall and Bottom including centering shuttering, cost of materials, HOM of Machinery, Curing Etc., Complete Excluding cost of Steel as per morth MORTH specification No. 1500, 1700, 2200. Including Cost of material, Labour, HOM complete as per Specification- WALL & Bottom thickness 15Cm(Item No 37.59.2 page no 271)								
	Bottom Raft								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	2	96.00	1.10	0.15	31.68		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	2	98.00	1.10	0.15	32.34		
		Cum	2	101.00	1.10	0.15	33.33		
	3rd Cross Road House NO. 136-140	Cum	2	171.00	1.10	0.15	56.43		
	4th Main road House No. 84-99	Cum	2	171.00	1.10	0.15	56.43		
	3rd A Main Road	Cum	1	130.00	1.10	0.15	21.45		
	Euro kid pre School Road	Cum	1	220.00	1.10	0.15	36.30		
	3rd Cross Connecting SWD Drain	Cum	2	117.00	1.10	0.15	38.61		
	Side Walls								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	4	96.00	0.15	0.75	43.20		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	4	98.00	0.15	0.75	44.10		
		Cum	4	101.00	0.15	0.75	45.45		
	3rd Cross Road House NO. 136-140	Cum	4	171.00	0.15	0.75	76.95		
	4th Main road House No. 84-99	Cum	4	171.00	0.15	0.75	76.95		

Sl No	Description of work	Unit	Measurement				Qty	Rate	Amount
			No.	L	B	D			
	3rd A Main Road	Cum	2	130.00	0.15	0.75	29.25		
	Euro kid pre School Road	Cum	2	220.00	0.15	0.75	49.50		
	3rd Cross Connecting SWD Drain	Cum	4	117.00	0.15	0.75	52.65		
					Sub Total		724.62		
	New Culvert								
	Bottom Raft								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	1	12.70	1.80	0.20	4.57		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	1	12.80	1.80	0.20	4.61		
		Cum	1	11.50	1.80	0.20	4.14		
	3rd Cross Road House NO. 136-140	Cum	1	12.50	1.80	0.20	4.50		
		Cum	1	13.20	1.80	0.20	4.75		
	3rd A Main Road	Cum	1	13.20	1.80	0.20	4.75		
	Euro kid pre School Road	Cum	2	13.00	1.80	0.20	9.36		
	3rd Main Connecting to SWD Drain	Cum	1	7.00	1.20	0.20	1.68		
	3rd Cross Connecting SWD Drain	Cum	1	7.00	1.20	0.20	1.68		
	Side Walls								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	2	12.70	0.20	0.60	3.05		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	2	12.80	0.20	0.60	3.07		
		Cum	2	11.50	0.20	0.60	2.76		
	3rd Cross Road House NO. 136-140	Cum	2	12.50	0.20	0.60	3.00		
		Cum	2	13.20	0.20	0.60	3.17		
	3rd A Main Road	Cum	2	13.20	0.20	0.60	3.17		
	Euro kid pre School Road	Cum	4	13.00	0.20	0.60	6.24		
	3rd Main Connecting to SWD Drain	Cum	2	7.00	0.20	0.75	2.10		
	3rd Cross Connecting SWD Drain	Cum	2	7.00	0.20	0.75	2.10		
					Sub Total		68.70		
	SSM Drain								
	Bottom Concrete								
	3rd A Main Road	Cum	1	130.00	0.50	0.10	6.50		
	Euro kid pre School Road	Cum	1	220.00	0.50	0.10	11.00		
	Side Wall Coping Concrete								
	3rd A Main Road	Cum	2	130.00	0.45	0.15	17.55		
	Euro kid pre School Road	Cum	2	220.00	0.45	0.15	29.70		
					Sub Total		64.75		
	Basic rate	7002.82							
	Area weightage 6%	420.17							
	Sub Total	7422.99							
	Total						858.07	7422.99	6369445.00

7 KSRB M2200-6 Providing T.M.T bars Fe 500 steel reinforcement for R.C.C work including straightening, cutting, bending, hooking, placing in position, lapping and / or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. MORTH Specification NO.1600&2200 Specification No. Pg No.229 Item No.28.8.2

For Drain	Cum	From item no.6	724.62		
	kg	Steel assumed 65Kg/Cum of Concrete	47100.30		
	tonne		47.10		
For Culvert	Cum	From item No 6	68.70		
	kg	Steel assumed 95Kg/Cum of Concrete	6526.50		

SI No	Description of work	Unit	Measurement				Qty	Rate	Amount
			No.	L	B	D			
		Tonne					6.53		
	Basic rate	75610.0							
	Area weightage 6%	4536.6							
	Sub Total	80146.6							
	Total						53.63	80146.60	4298006.00
8	Providing and Fixing pre cast covering Slab made out of CC 1:2:4 with 10cm thick and Finishing cutting ,including form work,curing,including cost of alll materials, labour,hire charges of machinery,loading,unloading,lead and lift,transportation etc ,complete. (Data Rate)								
	2nd Cross house No. 71-75	Sqm	2	96.00	0.90		172.80		
	3rd Main Road (MCECHS Layout) House No. 62-70	Sqm	2	98.00	0.90		176.40		
	0.00	Sqm	2	101.00	0.90		181.80		
	3rd Cross Road House NO. 136-140	Sqm	2	171.00	0.90		307.80		
	4th Main road House No. 84-99	Sqm	2	171.00	0.90		307.80		
	3rd A Main Road	Sqm	1	130.00	0.90		117.00		
		Sqm	1	130.00	1.20		156.00		
	Euro kid pre School Road	Sqm	1	220.00	0.90		198.00		
		Sqm	1	220.00	1.20		264.00		
	3rd Cross Connecting SWD Drain	Sqm	2	117.00	0.90		210.60		
	Data Rate	2337.00							
	Total						2092.20	2337.00	4889472.00
9	Providing and Fixing pre cast covering Slab 250mm thick made out of CC 1:2:4 and jelly 20mm Down size with steel reinforcement including form work,curing,including cost of alll materials, labour,hire charges of machinery, loading, unloading, lead and lift,transportation etc ,complete.As per Engineer incha								
	New Culvert								
	MCECHS Layout								
	2nd Cross house No. 71-75	Sqm	1	12.70	1.80		22.86		
	3rd Main Road (MCECHS Layout) House No. 62-70	Sqm	1	12.80	1.80		23.04		
		Sqm	1	11.50	1.80		20.70		
	3rd Cross Road House NO. 136-140	Sqm	1	12.50	1.80		22.50		
		Sqm	1	13.20	1.80		23.76		
	3rd A Main Road	Sqm	1	13.20	1.80		23.76		
	Euro kid pre School Road	Sqm	2	13.00	1.80		46.80		
	3rd Main Connecting to SWD Drain	Sqm	1	7.00	1.20		8.40		
	3rd Cross Connecting SWD Drain	Sqm	1	7.00	1.20		8.40		
	Data rate	5418.00							
	Total						200.22	5418.00	1084792.00
10	KSRB 4-1.6 ; Providing and laying in position plain cement concrete of Mix 1:2:4 with OPC @ 240kgs, with 20mm and down size graded granite metal coarse aggregates @ 0.878 cum and fine aggretes @ 0.53cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills, including cost of all materials, labour, HOM curing complete as per specifications. Specification No. KBS 4.1, 4.2. (P.No-13,I No-4.6)								
	Kerb PCC								
	2nd Cross house No. 71-75	Cum	2	96.00	0.20	0.10	3.84		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	2	98.00	0.20	0.10	3.92		
		Cum	2	101.00	0.20	0.10	4.04		
	3rd Cross Road House NO. 136-140	Cum	2	171.00	0.20	0.10	6.84		
	4th Main road House No. 84-99	Cum	2	171.00	0.20	0.10	6.84		
	3rd A Main Road	Cum	2	130.00	0.20	0.10	5.20		
	Euro kid pre School Road	Cum	2	220.00	0.20	0.10	8.80		
	3rd Cross Connecting SWD Drain	Cum	2	117.00	0.20	0.10	4.68		
	Basic rate	5688.26							
	Area weightage 6%	341.30							

Sl No	Description of work	Unit	Measurement				Qty	Rate	Amount
			No.	L	B	D			
	Sub Total	6029.55							
	Total						44.16	6029.55	266265.00
11	Removing and resetting of kerb stones								
	2nd Cross house No. 71-75	m	2	96.00			192.00		
	3rd Main Road (MCECHS Layout) House No. 62-70	m	2	98.00			196.00		
	3rd Cross Road House NO. 136-140	m	2	171.00			342.00		
	4th Main road House No. 84-99	m	2	171.00			342.00		
	3rd A Main Road	m	1	130.00			130.00		
	Euro kid pre School Road	m	1	220.00			220.00		
						Total	1422.00		
	30% Missing/Damaged						427.00		
	Basic rate	99.00							
	Area weightage 6%	5.94							
	Sub Total	104.94							
	Total						995.00	104.94	104416.00
12	Providing and fixing pre cast solid cement concrete kerb stones made out of CC 1:2:4 with top and bottom width 114 and 165 mm respectively, 400mm high and 450mm in length finished with CM 1:3 plastering and finishing cutting including formwork, curing, including cost of materials, labour charges of machinery, loading and unloading, lead and lift, transportation etc., complete. As per the direction of Engineer incharge. (P.No.27, I.No.5.30 of PW, P&IWTDR SR 2018-19)								
	New kerb stone								
	2nd Cross house No. 71-75								
	From Item no. 11								
								30% Missing/Damaged	427.00
	3rd Main Road (MCECHS Layout) House No. 62-70		2	101.00			202.00		
	3rd A Main Road		1	130.00			130.00		
	Euro kid pre School Road		1	220.00			220.00		
	3rd Cross Connecting SWD Drain		2	117.00			234.00		
						Sub Total	1213.00		
	Total length						1213.00		
	No of Kerb Stones	Nos				Total Length/0.45	2695.56		
	Total	Nos					2696.00		
	Basic rate	408.00							
	Area weightage 6%	24.48							
	Sub Total	432.48							
	Total						2696.00	432.48	1165967.00
13	KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8 (Page No.180. Item no.24.1 of KPWD S.R Bangalore Circle 2018-2019)								
	Kerb Painting								
	2nd Cross house No. 71-75	Sqm	2	96.00		0.40	76.80		
	3rd Main Road (MCECHS Layout) House No. 62-70	Sqm	2	98.00		0.40	78.40		
		Sqm	2	101.00		0.40	80.80		
	3rd Cross Road House NO. 136-140	Sqm	2	171.00		0.40	136.80		
	4th Main road House No. 84-99	Sqm	2	171.00		0.40	136.80		
	3rd A Main Road	Sqm	2	130.00		0.40	104.00		
	Euro kid pre School Road	Sqm	2	220.00		0.40	176.00		
	3rd Cross Connecting SWD Drain	Sqm	2	117.00		0.40	93.60		
	Basic rate	80.00							
	Area weightage 6%	4.80							
	Sub Total	84.80							
	Total						883.20	84.80	74896.00

SI No	Description of work	Unit	Mesurement				Qty	Rate	Amount
			No.	L	B	D			
14	KSRRB M300-14. Excavation for roadwork in all types of soil by mechanical means including cutting and loading to tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transportation with a lead of 1.00 km and complete as per specifications MORTH Specificatio MORTH Specification No.301>Loading and unloading (I No-19.14,P No-143) (8 km lead = 2*1.28X5)								
	Road cut portion								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	1	78.00	2.10	0.23	37.67		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	1	78.00	2.00	0.23	35.88		
	3rd Cross Road House NO. 136-140	Cum	1	138.00	2.20	0.23	69.83		
	4th Main road House No. 84-99	Cum	1	138.00	2.10	0.23	66.65		
		Cum	1	13.00	10.00	0.45	58.50		
	Euro kid pre School Road	Cum	1	180.00	2.10	0.23	86.94		
	2nd main Road house no. 60-42	Cum	1	140.00	2.00	0.23	64.40		
	Basic rate	41.00							
	Area weightage 6%	2.46							
	8Km lead= (2*1.28*5)	12.80							
	Sub Total	56.26							
	Total						419.88	56.26	23623.00
15	KSRRB M300- Construction of Embankment with Material Gravel/ Murrum. KSRRB M300-53. Construction of embankment with approved material Gravel/Murrum with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement Table 300- 2 complete as per specifications.(Including cost of gravel / murrum, watering charges & compaction by vibratory roller to 95% of proctors density) MORTH Specification No. 305. (I No-19.60,P No-147)								
	3rd Cross Connecting SWD Drain	Cum	1	117.00	12.70	1.00	1485.90		
	Basic rate	325.00							
	Area weightage 6%	19.50							
	Sub Total	344.50							
	Total						1485.90	344.50	511893.00
16	KSRRB 300-46. Scarifying by mechanical means stone metal crust 50mm to 100mm thick with pick axes along with premix carpet / surface dressing and stacking of old serviceable materials including cost of all labour charges complete as per specifications. MORTH / Chapter 3.No. 19.52 page no.146								
	3rd Main Road (MCECHS Layout) House No. 62-70	Sqm	1	101.00	11.20		1131.20		
	3rd A Main Road	Sqm	1	130.00	11.50		1495.00		
	3rd Cross Connecting SWD Drain	Sqm	1	117.00	12.70		1485.90		
	Basic rate	39.00							
	Area weightage 6%	2.34							
	Sub Total	41.34							
	Total						4112.10	41.34	169995.00
17	KSRRB 300-58. Compaction of original ground by mechanical means including filling in depression occuring during rolling including cost of all labour, HOM complete as per specifications.(I No-19.64,P No-147)								
	3rd Main Road (MCECHS Layout) House No. 62-70	Sqm	1	101.00	11.20		1131.20		
	3rd A Main Road	Sqm	1	130.00	11.50		1495.00		
	3rd Cross Connecting SWD Drain	Sqm	1	117.00	12.70		1485.90		
	Basic rate	6.00							
	Area weightage 6%	0.36							
	Sub Total	6.36							
	Total						4112.10	6.36	26153.00

Sl No	Description of work	Unit	Mesurement				Qty	Rate	Amount
			No.	L	B	D			
18	Construction of granular sub-base Grading-V as Sub-base and drainage layer by providing coarse graded crushed stone aggregates of granite/ trap/basalt material, mixing in a mechanical mix plant at OMC, Carriage of mixed material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the 98 % proctor density, complete as per specifications Clause 401 of MORTH V Revision.(I No-20.5,P No-153)								
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	1	101.00	11.20	0.15	169.68		
	3rd A Main Road	Cum	1	130.00	11.50	0.15	224.25		
	3rd Cross Connecting SWD Drain	Cum	1	117.00	12.70	0.15	222.89		
	Road cut portion								
	4th Main road House No. 84-99								
		Cum	1	13.00	10.00	0.20	26.00		
	Basic rate	1882.00							
	Area weightage 6%	112.92							
	Sub Total	1994.92							
	Total						642.82	1994.92	1282365.00
19	KSRRB M400-17. Providing, laying, spreading and compacting cushed stone aggregates of granite / trap / basalt to wet mix macadam specifications including pre mixing the material with water at OMC in mechanical mix plant carriage of mixed materials by tipper to site, laying in uniform layers with paver in sub-base/base course on well prepared surface and compacting with vibratory roller to achieve the desired density complete as per specifications(P.No-155,I No-20.18)								
	New Road								
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	1	101.00	11.20	0.23	260.18		
	3rd A Main Road	Cum	1	130.00	11.50	0.23	343.85		
	3rd Cross Connecting SWD Drain	Cum	1	117.00	12.70	0.23	341.76		
	Road cut portion								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	1	78.00	2.10	0.23	37.67		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	1	78.00	2.00	0.23	35.88		
	3rd Cross Road House NO. 136-140	Cum	1	138.00	2.20	0.23	69.83		
	4th Main road House No. 84-99	Cum	1	138.00	2.10	0.23	66.65		
		Cum	1	13.00	10.00	0.23	29.90		
	Euro kid pre School Road	Cum	1	180.00	2.10	0.23	86.94		
	2nd main Road house no. 60-42	Cum	1	140.00	2.00	0.23	64.40		
	Basic rate	1888.00							
	Area weightage 6%	113.28							
	Sub Total	2001.28							
	Total						1337.06	2001.28	2675830.00
20	KSRRB 500-1.Cleaning the existing WBM Road surface including removing of binding materials and other foreign matter with wire brushes and small picks sweeping with brooms or soft brushes and finally dusting with old gunny bags and bar or compressed air to receive bituminous treatment including cost of all materials, labhour, HOM of machineries complet as per specifications.(P.No.158,I.No.21.1)								
	New Road								
	3rd Main Road (MCECHS Layout) House No. 62-70	Sqm	1	101.00	11.20		1131.20		
	3rd A Main Road	Sqm	1	130.00	11.50		1495.00		
	3rd Cross Connecting SWD Drain	Sqm	1	117.00	12.70		1485.90		
	Road cut portion								
	MCECHS Layout								
	2nd Cross house No. 71-75	Sqm	1	78.00	2.10		163.80		
	3rd Main Road (MCECHS Layout) House No. 62-70	Sqm	1	78.00	2.00		156.00		

Sl No	Description of work	Unit	Measurement				Qty	Rate	Amount
			No.	L	B	D			
	3rd Cross Road House NO. 136-140	Sqm	1	138.00	2.20		303.60		
	4th Main road House No. 84-99	Sqm	1	138.00	2.10		289.80		
		Sqm	1	13.00	10.00		130.00		
	Euro kid pre School Road	Sqm	1	180.00	2.10		378.00		
	2nd main Road house no. 60-42	Sqm	1	140.00	2.00		280.00		
	Basic rate	21.00							
	Area weightage 6%	1.26							
	Sub Total	22.26							
	Total						5813.30	22.26	129405.00
21	KSRRB M500-6. Providing and applying primer coat with S.S. bitumen emulsion on prepared surface of granular base such as WMM including cleaning of road surface and spraying primer at the rate of 0.60 kg / sqm using mechanical means complete as per specifications Clause 502 of MORTH V revision(P.No-158,I No-21.6)								
		Sqm	From Item No. 20				5813.30		
	For old Road Provide 25% Profile Correction	Sqm	from item no 23 =(12962.10X25%)=3240.53				3240.53		
	Basic rate	32.00							
	Area weightage 6%	1.92							
	Sub Total	33.92							
	Total						9053.83	33.92	307106.00
22	KSRRB M500-17. Providing and laying dense graded bituminous macadam using crushed aggregates of specified grading, premixed with VG30 grade bituminous binder and, transporting the hot mix to work site, laying to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications Clause 505 of MORTH V revisionusing 40/60 TPH capacity H.M.P. with Mechanical paver Gr-II (50 mm to 75 mm) with 4.5 % VG-30 Bitumen (P.No-160,I No-21.17.6)								
	For old Road Provide 25% Profile Correction		from item no 23 =(12962.10X25%)=3240.53				12962.10		
		Cum		3240.53		0.05	162.03		
	New Road								
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	1	101.00	11.20	0.05	56.56		
	3rd A Main Road	Cum	1	130.00	11.50	0.05	74.75		
	3rd Cross Connecting SWD Drain	Cum	1	117.00	12.70	0.05	74.30		
	Road cut portion								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	1	78.00	2.10	0.05	8.19		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	1	78.00	2.00	0.05	7.80		
	3rd Cross Road House NO. 136-140	Cum	1	138.00	2.20	0.05	15.18		
	4th Main road House No. 84-99	Cum	1	138.00	2.10	0.05	14.49		
		Cum	1	13.00	10.00	0.05	6.50		
	Euro kid pre School Road	Cum	1	180.00	2.10	0.05	18.90		
	2nd main Road house no. 60-42	Cum	1	140.00	2.00	0.05	14.00		
	Basic rate	6880.00							
	Area weightage 6%	412.80							
	Sub Total	7292.80							
	Total						452.69	7292.80	3301387.00
23	KSRRB 500-2.Cleaning the existing black topped surface with brooms,soft brushes and finally dusting with old gunny bags and/or compressed air to receive bituminous treatment including cost of all materials,labhour, HOM of machineries complete as per specifications.(P.No.158,I.No.21.2).								
	MCECHS Layout								
	2nd Cross house No. 71-75	Sqm	1	96.00	10.00		960.00		
	3rd Main Road (MCECHS Layout) House No. 62-70	Sqm	1	98.00	10.90		1068.20		
		Sqm	1	101.00	11.20		1131.20		
	3rd Cross Road House NO. 136-140	Sqm	1	171.00	8.00		1368.00		
	4th Main road House No. 84-99	Sqm	1	171.00	10.00		1710.00		
	3rd A Main Road	Sqm	1	130.00	11.50		1495.00		

Sl No	Description of work	Unit	Measurement				Qty	Rate	Amount
			No.	L	B	D			
	Euro kid pre School Road	Sqm	1	220.00	9.40		2068.00		
	2nd main Road house no. 60-42	Sqm	1	171.00	9.80		1675.80		
	3rd Cross Connecting SWD Drain	Sqm	1	117.00	12.70		1485.90		
						Sub Total	12962.10		
	Basic rate	5.00							
	Area weightage 6%	0.30							
	Sub Total	5.30							
	Total						12962.10	5.30	68700.00
24	KSRRB 500-7. Providing and applying tack coat using 80/100 grade bitumen(VG10) on the prepared black topped surfaces at 2.5 kg per 10 sqm, heating bitumen in boiler fitted with spray set (excluding cleaning of road surface) including cost of all materials, labour, HOM complete as per specifications (P.No-161,I No-21.7)								
		Sqm	From Item No. 23				12962.10		
	Basic rate	12.00							
	Area weightage 6%	0.72							
	Sub Total	12.72							
	Total						12962.10	12.72	164878.00
25	Providing and laying Bituminous Concrete 40 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications. Clause 507 of MORTH V revision as per IRC SP-53-2015 - using 40-60 TPH capacity HMP with mechanical Paver, Gr-II (30-45mm) with 5.4 % of modified bitumen binder consisting of 4.97% VG- 30 bitumen (60/70 grade) 0.43% Plastomeric Thermoplastics (Waste plastic Additive). (P.No-1711 No-21.78.12)								
	MCECHS Layout								
	2nd Cross house No. 71-75	Cum	1	96.00	10.00	0.04	38.40		
	3rd Main Road (MCECHS Layout) House No. 62-70	Cum	1	98.00	10.90	0.04	42.73		
		Cum	1	101.00	11.20	0.04	45.25		
	3rd Cross Road House NO. 136-140	Cum	1	171.00	8.00	0.04	54.72		
	4th Main road House No. 84-99	Cum	1	171.00	10.00	0.04	68.40		
	3rd A Main Road	Cum	1	130.00	11.50	0.04	59.80		
	Euro kid pre School Road	Cum	1	220.00	9.40	0.04	82.72		
	2nd main Road house no. 60-42	Cum	1	171.00	9.80	0.04	67.03		
	3rd Cross Connecting SWD Drain	Cum	1	117.00	12.70	0.04	59.44		
	Basic rate	8061.00							
	Area weightage 6%	483.66							
	Sub Total	8544.66							
	Total						518.48	8544.66	4430270.00
26	KSRRB M800-13. Road Marking with Hot Applied Thermoplastic Compound with Reflectrising Glass Beads on Bituminous Surface/ Concrete Surface: Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads at 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 standards specified. The finished surface to be level, uniform and free from streaks and holes complete as per specifications. MORTH Specification No. 803(P.No-182,I No-24.15)								
	MCECHS Layout								
	2nd Cross house No. 71-75	Sqm	2.5	96.00	0.10		24.00		
	3rd Main Road (MCECHS Layout) House No. 62-70	Sqm	2.5	98.00	0.10		24.50		
		Sqm	2.5	101.00	0.10		25.25		
	3rd Cross Road House NO. 136-140	Sqm	2.5	171.00	0.10		42.75		
	4th Main road House No. 84-99	Sqm	2.5	171.00	0.10		42.75		
	3rd A Main Road	Sqm	2.5	130.00	0.10		32.50		
	Euro kid pre School Road	Sqm	2.5	220.00	0.10		55.00		
	2nd main Road house no. 60-42	Sqm	2.5	171.00	0.10		42.75		
	3rd Cross Connecting SWD Drain	Sqm	2.5	117.00	0.10		29.25		
	Basic rate	429.00							
	Area weightage 6%	25.74							

Sl No	Description of work	Unit	Mesurement				Qty	Rate	Amount
			No.	L	B	D			
	Sub Total	454.74							
	Total						318.75	454.74	144949.00
Grand Total									34999888.00
DPR Charges (1% of estimated cost)									400000.00
Project management And Consultancy Charges(1% of estimated cost)									400000.00
GST Charges (12% of estimated cost)									4199987.00
Miscellenious and rounding									125.00
Total Amount									40000000.00
RUPEES FOUR CRORE ONLY									

CERTIFICATE:

- 1) The work spot has been inspected and found to be necessary
- 2) The work spot comes under B.B.M.P
- 3) The provisions made in the estimate are necessary and minimum
- 4) The estimate is based on C.S.R of 2018-2019, Issue rates and Data Rates.

[Signature]
Assistant Engineer
BBMP
ಸಹಾಯಕ ಕಾರ್ಯದರ್ಶಿ
ಬಿಬಿಎಂಪಿ, ಬೆಂಗಳೂರು ನಗರ ಪಾಲಿಕೆ

[Signature]
Assistant Executive Engineer
BBMP
ಸಹಾಯಕ ಕಾರ್ಯದರ್ಶಿ
ಬಿಬಿಎಂಪಿ, ಬೆಂಗಳೂರು ನಗರ ಪಾಲಿಕೆ
ಬಿಬಿಎಂಪಿ, ಬೆಂಗಳೂರು-24

[Signature]
Executive Engineer
BBMP
19/9



Technical Sanction
Accorded For *Rs. 400,00,000/-*
Head of A/C *P-3853*
CER NO : *06* Date *19/9/2021*
[Signature]
TA CE (YMK)

ADMINISTRATIVE APPROVAL	
Accorded For Rs.	Four Crores only
Head of A/c	P-3853
Div. Ref. No.	14
Date	16/11/21
<i>[Signature]</i> AE 16/11	<i>[Signature]</i> EE(BTP) 16/11

DRAFT TENDER SCHEDULE

BRUHAT BANGALORE MAHANAGARA PALIKE

**NAME OF WORK:- IMPROVEMENTS ROADS AND DRAINS AT MCECHS LAYOUT IN WARD NO-05
BYATARAYANAPURA SUB DIVISION**

DRAFT TENDER SCHEDULE

Item No	Description of Work	Unit	Total Quantity as per Estimation	Rate as per estimate in Rs.	
				In Figures	In Words
1	Removing B.S Slab of Drain and stacking and (5km lead = 57+2*1.28X5) complete as per specifications and directions of the Engineer in charge.	Sqm	2923.20	174.74	Rupees One Hundred Seventy Four and Seventy Four Paise Only
2	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts as per specifications. iii) Dismantling Stone Masonry. B. Rubble Stone masonry in cement mortar. No. KBS (8km lead = 57+2*1.28X5) complete as per specifications and directions of the Engineer in charge.	Cum	28.98	441.86	Rupees Four Hundred Forty One and Eighty Six Paise Only
3	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means :B. Cement Concrete Grade M-15 & M-20. MORTH (8km lead = 57+2*1.28X5) complete as per specifications and directions of the Engineer in charge.	Cum	140.35	660.22	Rupees Six Hundred Sixty and Twenty Two Paise Only
4	Earthwork excavation by manual means for roads, drains & similar works in ordinary soil excavated surface levelled and sides neatly dressed, the disposed earth to be levelled neatly after breaking of clods (8km lead = 57+2*1.28X5) complete as per specifications and directions of the Engineer in charge.	Cum	3108.40	207.60	Rupees Two Hundred Seven and Sixty Paise Only
5	Providing and laying Plain cement concrete of mix 1:3:6 with OPC cement @ 220kgs, with crushed 40mm and down size graded granite metal coarse aggregates @ 0.89cum and fine aggregates @ 0.46cum, in foundation mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days Including cost of materials, labour, HOM curing form work, Scaffolding and Centering complete as per specifications and directions of the Engineer in charge.	Cum	395.82	5680.61	Rupees Five Thousand Four Hundred Twenty One and Ninety Paise Only
6	Providing laying plain/ reinforced cement concrete for side Drains Using M20 nominal mix Concrete with OPC at 300kgs. With 20mm and Down size granite metal coarse aggregate at 0.69cum and fine aggregate at 0.43cum Machine mixed, well compacted for wall and Bottom including centering shuttering, cost of materials, HOM of Machinery, Curing Etc., Complete Excluding cost of Steel as per morth MORTH specification No. 1500, 1700, 2200. Including Cost of material, Labour, HOM complete as per Specification-WALL & Bottom thickness 15Cm complete as per specifications and directions of the Engineer in charge.	Cum	858.07	7422.99	Rupees Seven Thousand Seventy and Twenty Paise Only

Item No	Description of Work	Unit	Total Quantity as per Estimation	Rate as per estimate in Rs.	
				In Figures	In Words
7	Providing T.M.T bars Fe 500 steel reinforcement for R.C.C work including straightening, cutting, bending, hooking, placing in position, lapping and / or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. MORTH complete as per specifications and directions of the Engineer in charge.	tonne	53.63	80146.60	Rupees Sixty Five Thousand Forty Six and Ninety Paise Only
8	Providing and Fixing pre cast covering Slab made out of CC 1:2:4 with 10cm thick and Finishing cutting, including form work, curing, including cost of all materials, labour, hire charges of machinery, loading, unloading, lead and lift, transportation etc, complete. (Data Rate) complete as per specifications and directions of the Engineer in charge.	Sqm	2092.20	2337.00	Rupees Two Thousand Three Hundred Thirty Seven Only
9	Providing and Fixing pre cast covering Slab 250mm thick made out of CC 1:2:4 and jelly 20mm Down size with steel reinforcement including form work, curing, including cost of all materials, labour, hire charges of machinery, loading, unloading, lead and lift, transportation etc complete as per specifications and directions of the Engineer in charge.	Sqm	200.22	5418.00	Rupees Five Thousand Four Hundred Eighteen Only
10	Providing and laying in position plain cement concrete of Mix 1:2:4 with OPC @ 240kgs, with 20mm and down size graded granite metal coarse aggregates @ 0.878 cum and fine aggregates @ 0.53cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills, including cost of all materials, labour, HOM curing complete as per specifications and directions of the Engineer in charge.	Cum	44.16	6029.55	Rupees Five Thousand Seven Hundred Forty Seven and Thirty Two Paise Only
11	Removing and resetting of kerb stones complete as per specifications and directions of the Engineer in charge.	m	995.00	104.94	Rupees One Hundred Four and Ninety Four Paise Only
12	Providing and fixing pre cast solid cement concrete kerb stones made out of CC 1:2:4 with top and bottom width 114 and 165 mm respectively, 400mm high and 450mm in length finished with CM 1:3 plastering and finishing cutting including formwork, curing, including cost of materials, labour charges of machinery, loading and unloading, lead and lift, transportation etc., complete as per specifications and directions of the Engineer in charge.	Nos	2696.00	432.48	Rupees Four Hundred Thirty Two and Forty Eight Paise Only
13	Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications and directions of the Engineer in charge.	Sqm	883.20	84.80	Rupees Eighty Four and Eighty Paise Only
14	Excavation for roadwork in all types of soil by mechanical means including cutting and loading to tipper, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transportation with a lead of 1.00 km and complete as per specifications and directions of the Engineer in charge. (8 km lead = 2*1.28X5)	Cum	419.88	56.26	Rupees Fifty Six and Twenty Six Paise Only

Item No	Description of Work	Unit	Total Quantity as per Estimation	Rate as per estimate in Rs.	
				In Figures	In Words
15	Construction of Embankment with Material Gravel/Murum. KSRRB M300-53. Construction of embankment with approved material Gravel/Murum with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement Table 300- 2 complete as per specifications and directions of the Engineer in charge.	Cum	1485.90	344.50	Rupees Three Hundred Forty Four and Fifty Paise Only
16	Scarifying by mechanical means stone metal crust 50mm to 100mm thick with pick axes along with premix carpet / surface dressing and stacking of old serviceable materials including cost of all labour charges complete as per specifications and directions of the Engineer in charge.	Sqm	4112.10	41.34	Rupees Forty One and Thirty Four Paise Only
17	Compaction of original ground by mechanical means including filling in depression occurring during rolling including cost of all labour, HOM complete as per specifications and directions of the Engineer in charge.	Sqm	4112.10	6.36	Rupees Six and Thirty Six Paise Only
18	Construction of granular sub-base Grading-V as Sub-base and drainage layer by providing coarse graded crushed stone aggregates of granite/ trap/basalt material, mixing in a mechanical mix plant at OMC, Carriage of mixed material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the 98 % proctor density, complete as per specifications and directions of the Engineer in charge.	Cum	642.82	1994.92	Rupees One Thousand Nine Hundred Ninety Four and Ninety Two Paise Only
19	Providing, laying, spreading and compacting crushed stone aggregates of granite / trap / basalt to wet mix macadam specifications including pre mixing the material with water at OMC in mechanical mix plant carriage of mixed materials by tipper to site, laying in uniform layers with paver in sub-base/base course on well prepared surface and compacting with vibratory roller to achieve the desired density complete as per specifications and directions of the Engineer in charge.	Cum	1337.06	2001.28	Rupees Two Thousand One and Twenty Eight Paise Only
20	Cleaning the existing WBM Road surface including removing of binding materials and other foreign matter with wire brushes and small picks sweeping with brooms or soft brushes and finally dusting with old gunny bags and bar or compressed air to receive bituminous treatment including cost of all materials, labhour, HOM of machineries complete as per specifications and directions of the Engineer in charge.	Sqm	5813.30	22.26	Rupees Twenty Two and Twenty Six Paise Only
21	Providing and applying primer coat with S.S. bitumen emulsion on prepared surface of granular base such as WMM including cleaning of road surface and spraying primer at the rate of 0.60 kg / sqm using mechanical means complete as per specifications and directions of the Engineer in charge.	Sqm	9053.83	33.92	Rupees Twenty Nine and Sixty Eight Paise Only

Item No	Description of Work	Unit	Total Quantity as per Estimation	Rate as per estimate in Rs.	
				In Figures	In Words
22	Providing and laying dense graded bituminous macadam using crushed aggregates of specified grading, premixed with VG30 grade bituminous binder and, transporting the hot mix to work site, laying to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications Clause 505 of MORTH V revision using 40/60 TPH capacity H.M.P. with Mechanical paver Gr-II (50 mm to 75 mm) with 4.5 % VG-30 Bitumen complete as per specifications and directions of the Engineer in charge.	Cum	452.69	7292.80	Rupees Six Thousand Four Hundred Seven and Seventy Paise Only
23	Cleaning the existing black topped surface with brooms, soft brushes and finally dusting with old gunny bags and/or compressed air to receive bituminous treatment including cost of all materials, labour, HOM of machineries complete as per specifications and directions of the Engineer in charge.	Sqm	12962.10	5.30	Rupees Five and Thirty Paise Only
24	Providing and applying tack coat using 80/100 grade bitumen (VG10) on the prepared black topped surfaces at 2.5 kg per 10 sqm, heating bitumen in boiler fitted with spray set (excluding cleaning of road surface) including cost of all materials, labour, HOM complete as per specifications and directions of the Engineer in charge.	Sqm	12962.10	12.72	Rupees Twelve and Seventy Two Paise Only
25	Providing and laying Bituminous Concrete 40 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications. Clause 507 of MORTH V revision as per IRC SP-53-2015 - using 40-60 TPH capacity HMP with mechanical Paver, Gr-II (30-45mm) with 5.4 % of modified bitumen binder consisting of 4.97% VG-30 bitumen (60/70 grade) 0.43% Plastomeric Thermoplastics (Waste plastic Additive). complete as per specifications and directions of the Engineer in charge.	Cum	518.48	8544.66	Rupees Seven Thousand Five Hundred Thirty Seven and Sixty Six Paise Only
26	Road Marking with Hot Applied Thermoplastic Compound with Reflectrising Glass Beads on Bituminous Surface/ Concrete Surface: Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads at 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 standards specified. The finished surface to be level, uniform and free from streaks and holes complete as per specifications and directions of the Engineer in charge.	Sqm	318.75	454.74	Rupees Four Hundred Fifty Four and Seventy Four Paise Only

"No of CORRECTION NIL"

[Signature]
Executive Engineer
BBMP

[Signature]
[Signature]
BBMP

BILL OF QUANTITIES

BRUHAT BANGALORE MAHANAGARA PALIKE

**NAME OF WORK:- IMPROVEMENTS ROADS AND DRAINS AT MCECHS LAYOUT IN WARD NO-05
BYATARAYANAPURA SUB DIVISION**

BILL OF QUANTITIES

Item No	Description of Work	Unit	Total Quantity as per Estimation	Rate as per estimate in Rs.	
				In Figures	In Words
1	Removing B.S Slab of Drain and stacking and (5km lead = 57+2*1.28X5) complete as per specifications and directions of the Engineer in charge.	Sqm	2923.20		
2	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts as per specifications. iii) Dismantling Stone Masonry. B. Rubble Stone masonry in cement mortar. No. KBS (8km lead = 57+2*1.28X5) complete as per specifications and directions of the Engineer in charge.	Cum	28.98		
3	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means :B. Cement Concrete Grade M-15 & M-20. MORTH (8km lead = 57+2*1.28X5) complete as per specifications and directions of the Engineer in charge.	Cum	140.35		
4	Earthwork excavation by manual means for roads, drains & similar works in ordinary soil excavated surface levelled and sides neatly dressed, the disposed earth to be levelled neatly after breaking of clods (8km lead = 57+2*1.28X5) complete as per specifications and directions of the Engineer in charge.	Cum	3108.40		
5	Providing and laying Plain cement concrete of mix 1:3:6 with OPC cement @ 220kgs, with crushed 40mm and down size graded granite metal coarse aggregates @ 0.89cum and fine aggregates @ 0.46cum, in foundation mechanically mixed, placed in foundation and compacted by vibration including curing for 14 days Including cost of materials, labour, HOM curing form work, Scaffolding and Centering complete as per specifications and directions of the Engineer in charge.	Cum	395.82		
6	Providing laying plain/ reinforced cement concrete for side Drains Using M20 nominal mix Concrete with OPC at 300kgs. With 20mm and Down size granite metal coarse aggregate at 0.69cum and fine aggregate at 0.43cum Machine mixed, well compacted for wall and Bottom including centering shuttering, cost of materials, HOM of Machinery, Curing Etc., Complete Excluding cost of Steel as per morth MORTH specification No. 1500, 1700, 2200. Including Cost of material, Labour, HOM complete as per Specification-WALL & Bottom thickness 15Cm complete as per specifications and directions of the Engineer in charge.	Cum	858.07		

Item No	Description of Work	Unit	Total Quantity as per Estimation	Rate as per estimate in Rs.	
				In Figures	In Words
7	Providing T.M.T bars Fe 500 steel reinforcement for R.C.C work including straightening, cutting, bending, hooking, placing in position, lapping and / or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. MORTH complete as per specifications and directions of the Engineer in charge.	tonne	53.63		
8	Providing and Fixing pre cast covering Slab made out of CC 1:2:4 with 10cm thick and Finishing cutting, including form work, curing, including cost of all materials, labour, hire charges of machinery, loading, unloading, lead and lift, transportation etc., complete. (Data Rate) complete as per specifications and directions of the Engineer in charge.	Sqm	2092.20		
9	Providing and Fixing pre cast covering Slab 250mm thick made out of CC 1:2:4 and jelly 20mm Down size with steel reinforcement including form work, curing, including cost of all materials, labour, hire charges of machinery, loading, unloading, lead and lift, transportation etc complete as per specifications and directions of the Engineer in charge.	Sqm	200.22		
10	Providing and laying in position plain cement concrete of Mix 1:2:4 with OPC @ 240kgs, with 20mm and down size graded granite metal coarse aggregates @ 0.878 cum and fine aggregates @ 0.53cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills, including cost of all materials, labour, HOM curing complete as per specifications and directions of the Engineer in charge.	Cum	44.16		
11	Removing and resetting of kerb stones complete as per specifications and directions of the Engineer in charge.	m	995.00		
12	Providing and fixing pre cast solid cement concrete kerb stones made out of CC 1:2:4 with top and bottom width 114 and 165 mm respectively, 400mm high and 450mm in length finished with CM 1:3 plastering and finishing cutting including formwork, curing, including cost of materials, labour charges of machinery, loading and unloading, lead and lift, transportation etc., complete as per specifications and directions of the Engineer in charge.	Nos	2696.00		
13	Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications and directions of the Engineer in charge.	Sqm	883.20		
14	Excavation for roadwork in all types of soil by mechanical means including cutting and loading to tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transportation with a lead of 1.00 km and complete as per specifications and directions of the Engineer in charge. (8 km lead = 2*1.28X5)	Cum	419.88		

Item No	Description of Work	Unit	Total Quantity as per Estimation	Rate as per estimate in Rs.	
				In Figures	In Words
15	Construction of Embankment with Material Gravel/Murum. KSRRB M300-53. Construction of embankment with approved material Gravel/Murum with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement Table 300- 2 complete as per specifications and directions of the Engineer in charge.	Cum	1485.90		
16	Scarifying by mechanical means stone metal crust 50mm to 100mm thick with pick axes along with premix carpet / surface dressing and stacking of old serviceable materials including cost of all labour charges complete as per specifications and directions of the Engineer in charge.	Sqm	4112.10		
17	Compaction of original ground by mechanical means including filling in depression occurring during rolling including cost of all labour, HOM complete as per specifications and directions of the Engineer in charge.	Sqm	4112.10		
18	Construction of granular sub-base Grading-V as Sub-base and drainage layer by providing coarse graded crushed stone aggregates of granite/ trap/basalt material, mixing in a mechanical mix plant at OMC, Carriage of mixed material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the 98 % proctor density, complete as per specifications and directions of the Engineer in charge.	Cum	642.82		
19	Providing, laying, spreading and compacting crushed stone aggregates of granite / trap / basalt to wet mix macadam specifications including pre mixing the material with water at OMC in mechanical mix plant carriage of mixed materials by tipper to site, laying in uniform layers with paver in sub-base/base course on well prepared surface and compacting with vibratory roller to achieve the desired density complete as per specifications and directions of the Engineer in charge.	Cum	1337.06		
20	Cleaning the existing WBM Road surface including removing of binding materials and other foreign matter with wire brushes and small picks sweeping with brooms or soft brushes and finally dusting with old gunny bags and bar or compressed air to receive bituminous treatment including cost of all materials, labour, HOM of machineries complete as per specifications and directions of the Engineer in charge.	Sqm	5813.30		
21	Providing and applying primer coat with S.S. bitumen emulsion on prepared surface of granular base such as WMM including cleaning of road surface and spraying primer at the rate of 0.60 kg / sqm using mechanical means complete as per specifications and directions of the Engineer in charge.	Sqm	9053.83		

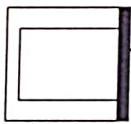
Item No	Description of Work	Unit	Total Quantity as per Estimation	Rate as per estimate in Rs.	
				In Figures	In Words
22	Providing and laying dense graded bituminous macadam using crushed aggregates of specified grading, premixed with VG30 grade bituminous binder and, transporting the hot mix to work site, laying to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications Clause 505 of MORTH V revision using 40/60 TPH capacity H.M.P. with Mechanical paver Gr-II (50 mm to 75 mm) with 4.5 % VG-30 Bitumen complete as per specifications and directions of the Engineer in charge.	Cum	452.69		
23	Cleaning the existing black topped surface with brooms, soft brushes and finally dusting with old gunny bags and/or compressed air to receive bituminous treatment including cost of all materials, labour, HOM of machineries complete as per specifications and directions of the Engineer in charge.	Sqm	12962.10		
24	Providing and applying tack coat using 80/100 grade bitumen (VG10) on the prepared black topped surfaces at 2.5 kg per 10 sqm, heating bitumen in boiler fitted with spray set (excluding cleaning of road surface) including cost of all materials, labour, HOM complete as per specifications and directions of the Engineer in charge.	Sqm	12962.10		
25	Providing and laying Bituminous Concrete 40 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications. Clause 507 of MORTH V revision as per IRC SP-53-2015 - using 40-60 TPH capacity HMP with mechanical Paver, Gr-II (30-45mm) with 5.4 % of modified bitumen binder consisting of 4.97% VG-30 bitumen (60/70 grade) 0.43% Plastomeric Thermoplastics (Waste plastic Additive). complete as per specifications and directions of the Engineer in charge.	Cum	518.48		
26	Road Marking with Hot Applied Thermoplastic Compound with Reflectrising Glass Beads on Bituminous Surface/ Concrete Surface: Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads at 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 standards specified. The finished surface to be level, uniform and free from streaks and holes complete as per specifications and directions of the Engineer in charge.	Sqm	318.75		

Executive Engineer
BBMP

TYPICAL CROSS SECTION



PRECAST COVER



TYPICAL CROSS SECTION OF RCC DRAIN

[illegible]

- 1) Do Not Scale The drawing
- 2) All the Dimensions Are In MM

[Signature]

RUDRAPRASAD CONSULTANTS
STRUCTURAL ENGINEERS, ARCHITECTS
& PROJECT MANAGEMENT CONSULTANTS

Box 3, 7th floor,
MULTISTOREY BUILDING - 460023
P. Durgam
Ph: 81-442222/3/4 - 81725 6234
E-mail: info@rudraprasad.com
Web: www.rudraprasad.com



PRODUCT IMPROVEMENTS TO ROADS AND DRAINAGE LAYOUT WARD NO.08 BY ATARAYANPURA DIVISION

7966

TYPICAL CROSS SECTION OF ASPHALT ROAD

R. MARTIN REEDMAN, Jr. © 1991

QUESTION In RUDOLPHINE, what organizes the pig

DATE	DEPOSIT	REMARKS
25-11-2020		

Order No	WC57/01	SOUL	
----------	---------	------	--

NTS

10

ROAD PHOTOGRAPHS

Improvements Roads and Drains at MCECHS Layout in Ward No-05, Byatarayanapura Sub Division



KV Jakkur Rd
Century Linea
KV Jakkur Rd

125, Jakkur, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.073815	13°4'25" N	23°C
Longitude	77.605636	77°36'20" E	73°F



KV Jakkur Rd
Century Linea
KV Jakkur Rd

Unnamed Road, Jakkur, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.073458	13°4'24" N	24°C
Longitude	77.606076	77°36'21" E	75°F

Rudraprasad Consultants
Structural Engineers, Architects &
Project management consultants



ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ವ್ಯಾಪಾರಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ವ್ಯಾಪಾರಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-24

Improvements Roads and Drains at MCECHS Layout in Ward No-05, Byatarayanapura Sub Division



Unnamed Road, Jakkur, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.073456	13°4'24" N	24°C
Longitude	77.606104	77°36'21" E	75°F



125, Jakkur, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.074006	13°4'26" N	25°C
Longitude	77.605211	77°36'18" E	77°F

R.V.

Rudraprasad Consultants
Structural Engineers, Architects &
Project management consultants



ಸಹಾಯಕ ಅಭಿಯಂತರರು
ದಿ.ದಿ.ಎಂ.ಪಿ. ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ದಿ.ದಿ.ಎಂ.ಪಿ. ಬೆಂಗಳೂರು-24

Improvements Roads and Drains at MCECHS Layout in Ward No-05, Byatarayanapura Sub Division



Jakkur Rd, Jakkuru, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.074038	13°4'26" N	25°C
Longitude	77.604936	77°36'17" E	77°F



36, 4th Cross Navya Nagar Rd, Jakkuru, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.074088	13°4'26" N	25°C
Longitude	77.604441	77°36'15" E	77°F

Rudraprasad Consultants
Structural Engineers, Architects &
Project management consultants



ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಪ್ಯಾಟರ್ನಾಯಕನವರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಪ್ಯಾಟರ್ನಾಯಕನವರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-24

Improvements Roads and Drains at MCECHS Layout in Ward No-05, Byatarayanapura Sub Division



KV Jaram Rd, 35, 4th Cross Narayana Nagar Rd, Jakkur, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.072654	13°4'21" N	25°C
Longitude	77.605743	77°36'20" E	77°F

Century Linea
Google

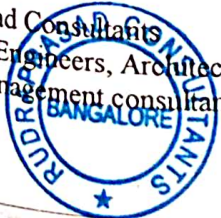


35, 4th Cross Narayana Nagar Rd, Jakkur, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.074119	13°4'26" N	25°C
Longitude	77.60455	77°36'16" E	77°F

Century Linea
Google

Rudraprasad Consultants
Structural Engineers, Architects &
Project management consultants



ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಪ್ಯಾಟರ್ನಾಯಕರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಪ್ಯಾಟರ್ನಾಯಕರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬೆಂಗಳೂರು-24.

Improvements Roads and Drains at MCECHS Layout in Ward No-05, Byatarayanapura Sub Division



KV Jairam Rd, Jakkur, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.072702	13°4'21" N	25°C
Longitude	77.605752	77°36'20" E	77°F



125, Jakkur, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.074597	13°4'28" N	25°C
Longitude	77.605279	77°36'19" E	77°F

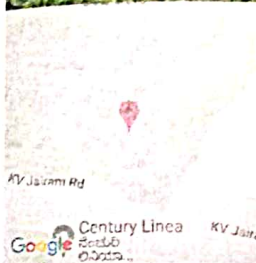
Rudraprasad Consultants
Structural Engineers, Architects &
Project management consultants



[Signature]
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬಿ.ಬಿ.ಎಂ.ಸಿ. ಪ್ಲಾಟ್‌ರಾಯನಮಠ-ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಸಿ. ಬೆಂಗಳೂರು-24

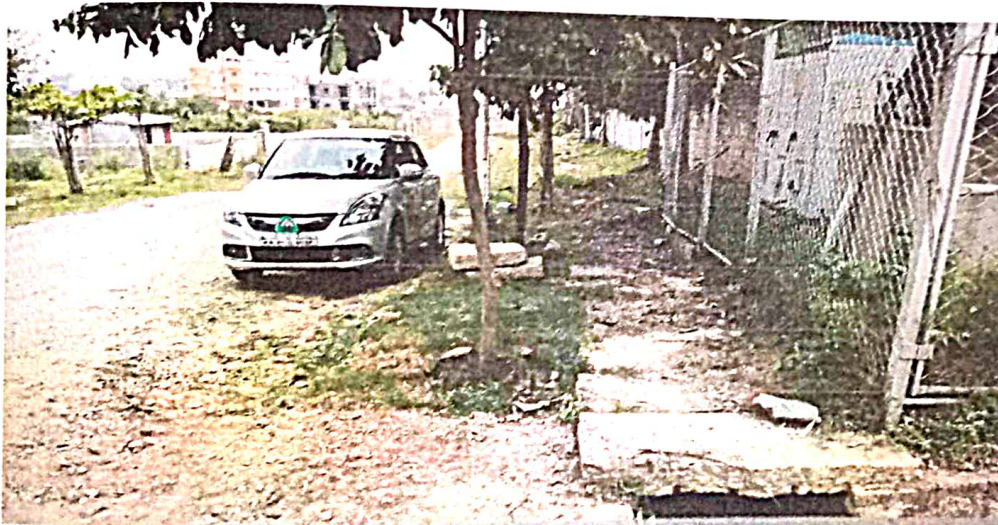
[Signature]
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬಿ.ಬಿ.ಎಂ.ಸಿ. ಪ್ಲಾಟ್‌ರಾಯನಮಠ-ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಸಿ. ಬೆಂಗಳೂರು-24

Improvements Roads and Drains at MCECHS Layout in Ward No-05, Byatarayanapura Sub Division



Unnamed Road, Jakkur, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.07419	13°4'27" N	24°C
Longitude	77.606062	77°36'21" E	75°F



Unnamed Road, Jakkur, Bengaluru, Karnataka 560064, India

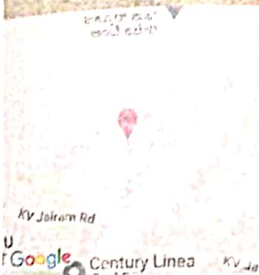
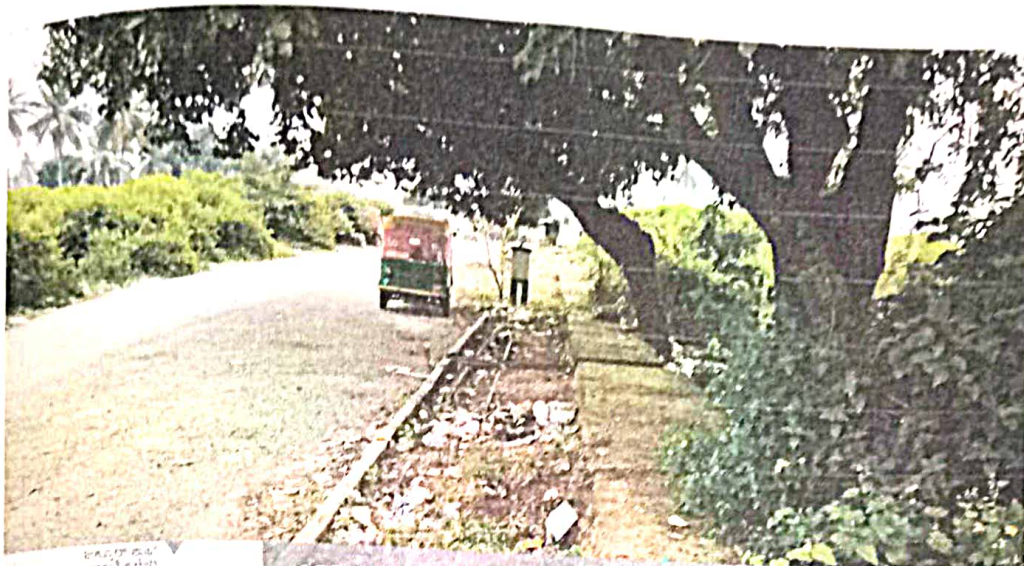
	Decimal	DMS	
Latitude	13.073458	13°4'24" N	24°C
Longitude	77.606076	77°36'21" E	75°F

Rudraprasad Consultants
Structural Engineers, Architects &
Project management consultants



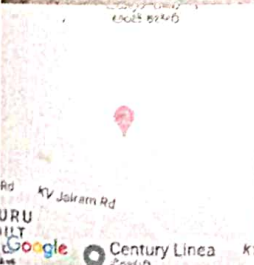
Handwritten signatures and text:
 ಸಹಾಯಕ ಅಭಿಯಂತರರು
 ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
 ದಿ.ಬಿ.ಎಂ.ಪಿ. ದ್ವಾರಕಾಯನಪುರ ಉಪ ವಿಭಾಗ
 ದಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-24

Improvements Roads and Drains at MCECHS Layout in Ward No-05, Byatarayanapura Sub Division



125, Jakkur, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.075007	13°4'30" N	24°C
Longitude	77.605609	77°36'20" E	75°F



95, Jakkur Rd, Jakkur, Bengaluru, Karnataka 560064, India

	Decimal	DMS	
Latitude	13.074675	13°4'28" N	25°C
Longitude	77.60477	77°36'17" E	77°F

Rudraprasad Consultants
Structural Engineers, Architects &
Project management consultants

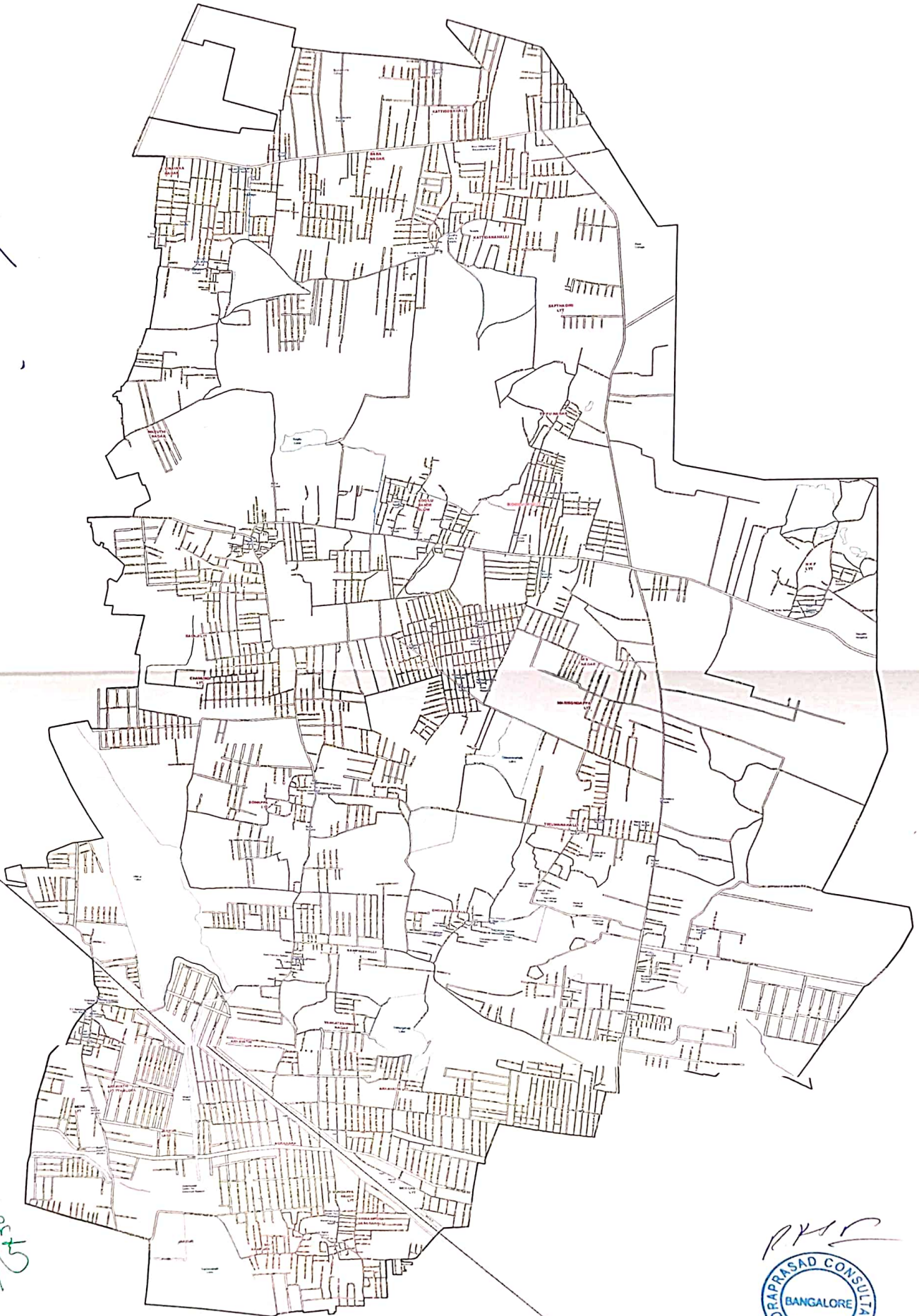


ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಬಹುಮಾನವಾರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಸಿ. ಬೆಂಗಳೂರು-24

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬಹುಮಾನವಾರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಸಿ. ಬೆಂಗಳೂರು-24

WARD MAP

BRUHAT BENGALURU MAHANAGARA PALIKE
5-JAKKURU



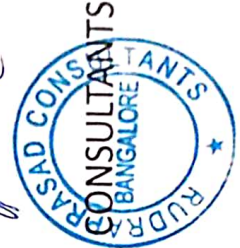
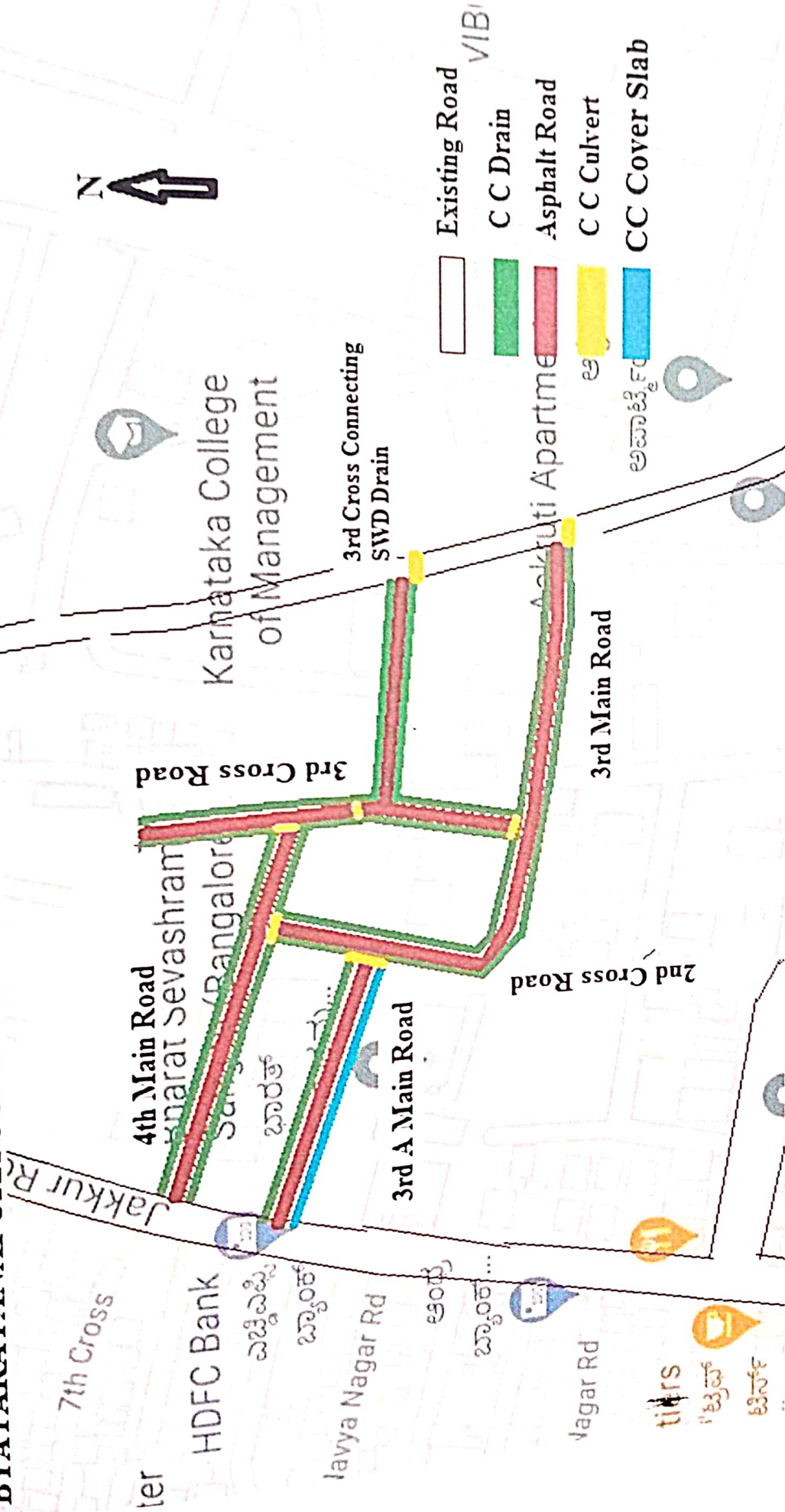
Handwritten notes in Kannada, including a signature and the text 'ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ' (Bruhat Bengaluru Mahanagara Palike).

Handwritten notes in Kannada, including a signature and the text 'ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ' (Bruhat Bengaluru Mahanagara Palike).



KEY MAP

IMPROVEMENTS ROADS AND DRAINS AT MCECHS LAYOUT IN WARD NO-05 BYATARAYANAPURA SUB DIVISION

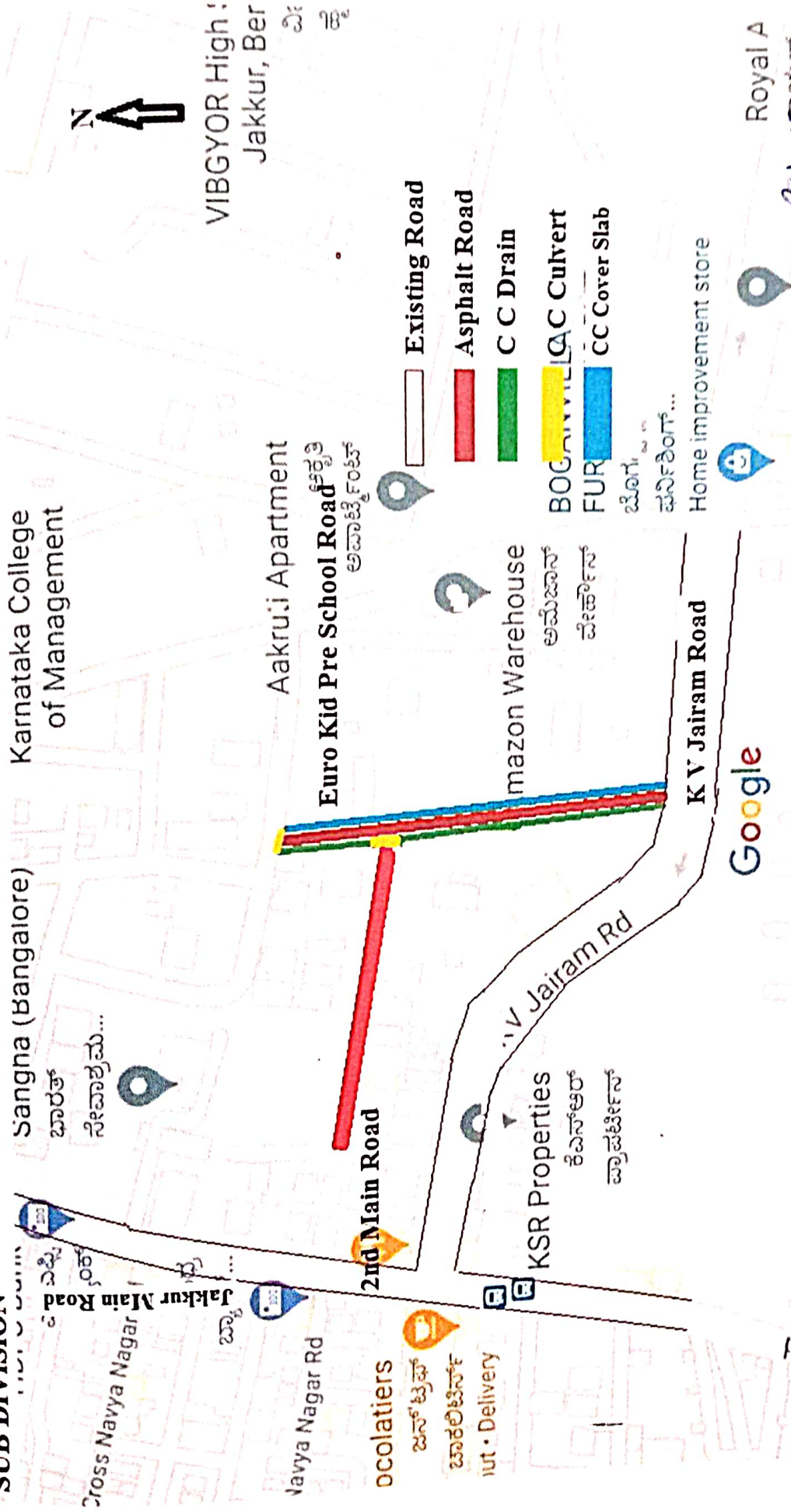


RUDRAPRASAD CONSULTANTS

ಸಹಾಯಕ ಕಾರ್ಯದರ್ಶಿ ಅಭಿಯಂತರರು
ಬಾಹ್ಯರಾಜ್ಯಸಮರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಸಿ., ಬೆಂಗಳೂರು-56

ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಬಾಹ್ಯರಾಜ್ಯಸಮರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಸಿ., ಬೆಂಗಳೂರು-56

IMPROVEMENTS ROADS AND DRAINS AT MCECHS LAYOUT IN WARD NO-05 BY AT ARAYANAPURA SUB DIVISION



ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಶಿಬಿರಾಧ್ಯಕ್ಷರು ಉಪ ನಿರ್ದೇಶಕರು
ಜಿ.ಪಿ.ಎಂ.ಸಿ., ಬೆಂಗಳೂರು-74